DRY CREEK WATER ASSOCIATION (DCWA) FLOOD PROTECTION ALTERNATIVES

Dry Creek Water Association

Water Quality Mitigation Projects - **Dry Creek Water Association (DCWA) Wellfield Modifications**
Text for inclusion in the Elwha River Restoration Project JARPA
All bold text is copied from the JARPA application. All responses are in normal text.

SECTION 2

4. NAME, ADDRESS, AND PHONE NUMBER OF PROPERTY OWNER(S), IF OTHER THAN APPLICANT.
Dry Creek Water Association, W. 3671 Edgewood Drive, Port Angeles, WA 98363

5. LOCATION (STREET ADDRESS, INCLUDING CITY, COUNTY AND ZIP CODE, WHERE PROPOSED ACTIVITY EXISTS OR WILL OCCUR)
Dry Creek Water Association Well Field and Pipeline

LOCAL GOVERNMENT WITH JURISDICTION (CITY OR COUNTY)
Clallam County

WATERBODY
Elwha River

TRIBUTARY OF
N/A

WRIA#
18

¼ SECTION
NE 1/4

SECTION
10

TOWNSHIP
30 N

RANGE
7W

SHORELINE DESIGNATION
Conservancy Within 200-feet of the Elwha River

TAX PARCEL NUMBER
See Ownership List

ZONING DESIGNATION
RCC5

DNR STREAM TYPE, IF KNOWN
F

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6. DESCRIBE THE CURRENT USE OF THE PROPERTY, AND THE STRUCTURES EXISTING ON THE PROPERTY. IF ANY PORTION OF THE PROPOSED ACTIVITY IS ALREADY COMPLETED ON THIS PROPERTY, INDICATE THE MONTH AND YEAR OF COMPLETION.

The Dry Creek Water Association (DCWA) provides water service for residential and commercial/industrial customers and a rural fire district located southwest of Port Angeles, Washington. The existing system consists of a primary distribution loop tied to two reservoirs with an operating water level of elevation 650 feet. The water is supplied by a well field consisting of two operating wells and a single backup well (a fourth well was recently abandoned), with a booster pump station feeding into the distribution loop. The well field lies within 200 feet from the Ordinary High Water Mark (OHWM) of the east bank of Elwha River. The site is located on land leased from the Elofson Family and access is through Elofson and Collins properties.

The new well field is located on the west bank of the Elwha River adjacent to Sampson Road and within 200-feet of the river. The area is currently undeveloped, but used heavily for informal recreation.

IS THIS PROPERTY ON AGRICULTURAL LAND?
No

ARE YOU A USDA PROGRAM PARTICIPANT?
No

7.a. DESCRIBE THE PROPOSED CONSTRUCTION AND/OR FILL WORK FOR THE PROJECT THAT YOU WANT TO BUILD THAT NEEDS AQUATIC PERMITS: COMPLETE PLANS AND SPECIFICATIONS SHOULD BE PROVIDED FOR ALL WORK WATERWARD OF THE ORDINARY HIGH WATER MARK OR LINE, INCLUDING TYPES OF EQUIPMENT TO BE USED. IF APPLYING FOR A SHORELINE PERMIT, DESCRIBE ALL WORK WITHIN AND BEYOND 200 FEET OF THE ORDINARY HIGH WATER MARK. ATTACH A SEPARATE SHEET IF ADDITIONAL SPACE IS NEEDED.

The primary purpose of this project is to provide DCWA with a water supply system that is accessible and protected from the 100-year flood during and after the dam removal. This will require that the access roads, structures and well heads are located above this flood elevation. The U.S. Army Corps of Engineers (COE) has modeled a 100-year flood and identified elevation 87.75 feet for the well site area. The elevation was established based on a modeled river water surface elevation plus allowances for aggradation and uncertainty (or freeboard). All elevations used in this design are based on topographic maps from the 2001 Lidar survey of the area.

Note: Recent negotiations between NPS and DCWA have resulted in selection of Alternative 2, depicted on the attached drawings, as the best solution for providing flood protection for the long-term water supply for DCWA.

Alternative 2 involves the construction of a new well field, transmission pipeline, and connection to the existing DCWA distribution loop at Laird Road. This new well field would be located within the 100-year floodplain, and partly within 200 feet of the OHWM, on the west side of the Elwha River approximately 1/4-mile south of the one-lane bridge on Elwha River Road. The site location and layout are shown on Figure 1.

The access to the site is provided by an unpaved road (Sampson Road) descending south from Elwha River Road, near the one-lane bridge. The last approximately 500 feet of the access road are located on the valley floor, in the overbank area of the floodplain. The approximate ground surface elevation of this area is 77 feet.

The geology of the new well field is expected to be consistent with the conditions at the existing well field, which consists of alluvial materials (sands, gravels and cobbles), based on a review of the boring log for the

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test well located at the new well field site. The well field is also located approximately 500 feet north of a residence which uses a septic system.

This site is located on land owned by Green Crow Properties.

Proposed improvements for this alternative include:

- Raising the existing access road (Sampson Road) and well field area to the 100-year flood elevation
- Realigning a portion of the existing access road and placing a culvert to pass hillside drainage
- Providing river erosion armoring
- Installing storm water culverts
- Drilling and installing three wells and installing three pumps
- Providing an electrical supply and telemetry sensing from the DCWA reservoir to the well pumps
- Constructing a control/chlorination building
- Constructing a transmission pipeline from the well field to the DCWA distribution loop at Laird Road
- Removing the adjacent septic system, abandoning the drainfield and vacating the residence
- Demolishing the well/chlorination building and abandoning wells No. 1, 3 and 4 at the existing well field

The last approximately 500 feet of access road and the new well field site would be raised at or above the 100-year flood elevation (post dam removal), from an approximate grade of 77 feet to an elevation of 87.75 feet. No improvements are proposed for the portion of the access road above elevation 87.75 feet. Approximately 350 feet of access road located along the well field site would need to be realigned toward the east to avoid the road embankment fill extending into the adjacent ponds. This realignment is indicated on Figure 2. The well field site grade elevation would be raised, from an approximate existing grade of 77 feet, to elevation 87.75 feet and configured as indicated on Figures 2 and 3.

The well field and access road embankments facing the river would be protected with riprap from scour resulting from flood flows or river migration.

The raised access road and well field would obstruct river flows during high flow events and create a water pocket between the road and the steep hillside to the west. To minimize the flow obstruction and help prevent water from becoming trapped when flood waters recede, one or more large diameter culverts would be installed across the access road. The current design reflect the use of two 36-inch diameter culverts crossing through the elevated access road, but culvert sizing and placement location would be determined during final design.

The new wells for this alternative would be 6 inches in diameter and drilled to an approximate depth of 50 feet, with well heads terminating at approximately 3 feet above grade.

Electrical service for the pumps and control building would be supplied by the utility (Clallam County PUD No. 1) from existing overhead lines located approximately 550-feet south of the well field site. The service connection would require installation of new 3-phase pole-mounted transformers, sized to accommodate the electrical loads from the well field and located on a new pole. Electrical cable from the pole to the new control/chlorination building would be buried in a conduit. The existing dedicated telephone cable from the reservoir to the existing well field would be extended across the Elwha River to the new well field. The new telephone cable would utilize the existing overhead telephone cable support poles (located in close proximity to the existing and alternative sites) to cross the Elwha River. The telephone cable from the pole to the control building would be direct buried in the same trench with the power conduit.

A new control/chlorination building would be constructed at the new raised well field elevation. The building would be a slab on-grade, masonry block building, with approximate exterior dimensions of 12 feet by 9.5 feet. The discharge pipes from each well would connect to a manifold in the

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control/chlorination building. This manifold would feed a single discharge pipe connecting to the existing transmission pipeline. Liquid chlorine (hypochlorite) would be injected into the combined discharge pipe before it exits the building. A new perimeter fence would be provided to enclose the control building and the wells.

This alternative includes a pipeline from the well field to a connection with the DCWA distribution loop at Laird Road via: the site access road; Elwha River Road; and the one-lane bridge. The pipeline route is indicated on the Figures 4 and 5. The pipeline would consist of approximately 6,700 linear feet of new 8-inch diameter ductile iron pipe.

The buried segments of the route would be located within the limits of the site access road and within the roadway of Elwha River Road. The alignment along the western portion of Elwha River Road (between the one-lane bridge and the top of the bluff) would be trenched in the roadway, on the down-slope side where a thin cap of alluvial sediments should exist, to minimize the chances of encountering bedrock. The remainder of the buried pipe alignment could be located along the edge of Elwha River Road.

A portion of the proposed pipeline (from approximately 350 linear feet to approximately 450 linear feet from the proposed well field, and again from approximately 700 linear feet to approximately 800 linear feet from the proposed well field) will be laid approximately 20 feet east of two wetlands (Wetlands L and H, respectively). A Talent ditch runs from east of Sampson Road, across the road (through an existing culvert) at approximately 350 linear feet from the proposed wellfield, and then runs north along the edge of Wetland H approximately 20 feet west of Sampson Road. This ditch then connects the two wetlands mentioned above. Another portion of the proposed pipeline (from approximately 4,500 linear feet to approximately 5,900 linear feet from the proposed well field) would be laid approximately 8 feet north of a Talent ditch. Another portion (from approximately 5,900 linear feet to approximately 6,650 linear feet from the proposed well field) will be laid approximately 8 feet north of Wetland ER-2, and approximately 8 feet south of Wetland ER-1. See Figures 4 and 5 for pipeline routing in relation to wetlands and the Talent ditches. It is not expected that any of the work done in laying the pipeline will affect the routing or capacity of either of the Talent ditches

Once the new well field is in operation, the existing well field would be abandoned. The existing control/chlorination building would be demolished and wells abandoned in accordance with Washington State requirements.

Construction of the new well field will utilize conventional earthmoving equipment such as hydraulic excavators, bulldozers, backhoes, scrapers, cement trucks, etc.

7.b. DESCRIBE THE PURPOSE OF THE PROPOSED WORK AND WHY YOU WANT OR NEED TO PERFORM IT AT THE SITE. PLEASE EXPLAIN ANY SPECIFIC NEEDS THAT HAVE INFLUENCED THE DESIGN.

The Elwha River Restoration Project includes the removal of the Elwha and Glines Canyon Dams from the Elwha River near Port Angeles, Washington. As a result of this dam removal, the 100-year flood event would inundate the existing well field. This would render the well field unusable, and the DCWA members would be cut off from potable water. Protection of the existing wells would require excavation and placement of approximately 1500 cubic yards of fill and riprap below the OHWM of the river.

7.c. DESCRIBE THE POTENTIAL IMPACTS TO THE CHARACTERISTIC USES OF THE WATER BODY. THESE USES MAY INCLUDE FISH OR AQUATIC LIFE, WATER QUALITY, WATER SUPPLY, RECREATION AND AESTHETICS. IDENTIFY PROPOSED ACTIONS TO AVOID, MINIMIZE, OR MITIGATE DETRIMENTAL IMPACTS, AND PROVIDE PROPER PROTECTION OF FISH AND AQUATIC LIFE. ATTACH A SEPARATE SHEET IF ADDITIONAL SPACE IS NEEDED.

The Elwha River would not be affected by the well field and road protection except during flood events approaching the 100-year event.

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8. WILL THE PROJECT BE CONSTRUCTED IN STAGES?
The well field, road improvements, and pipeline will be constructed prior to dam removal.

PROPOSED STARTING DATE:
The start date is undetermined.

ESTIMATED DURATION OF ACTIVITY:
6 months.

9. CHECK IF ANY STRUCTURES WILL BE PLACED:

WATERWARD OF THE ORDINARY HIGH WATER MARK OR LINE FOR FRESH OR TIDAL WATERS.
Two 36-inch culverts will be placed in the access road to pass hillside drainage.

WATERWARD OF MEAN HIGH WATER LINE IN TIDAL WATERS:
No.

10. WILL FILL MATERIAL (ROCK, FILL, BULKHEAD, OR OTHER MATERIAL) BE PLACED:

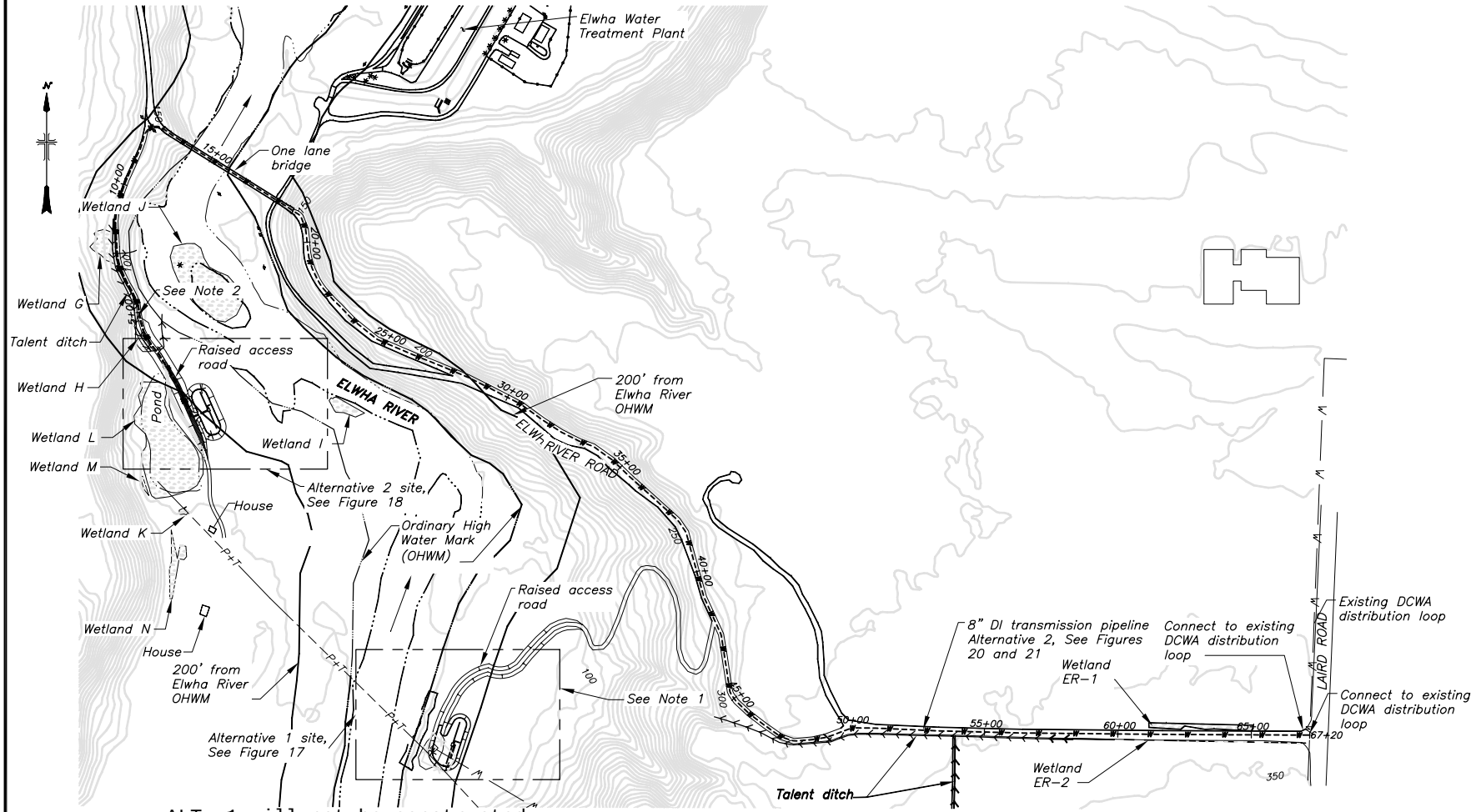
WATERWARD OF THE ORDINARY HIGH WATER MARK OR LINE FOR FRESH OR TIDAL WATERS.
In Alternative 2, no.

WATERWARD OF MEAN HIGH WATER LINE IN TIDAL WATERS.
No.

11. WILL MATERIAL BE PLACED IN WETLANDS?
No.

G. WILL PROPOSED ACTIVITY CAUSE FLOODING OR DRAINING OF WETLANDS?
No.

13. WILL EXCAVATION OR DREDGING BE REQUIRED IN WATER OR WETLANDS?
In Alternative 2, no.



NOTES: ALT. 1 will not be constructed.

1. *Alternative 1 Site Location 48°6'40"N , 123°33'17"W*
   Start Alternative 1 road fill and embankment at existing elevation 91.00
   Directions to Alternative 1 Site: From U.S. 101W
   Turn right onto Laird Rd.
   Turn left onto Elwha River Rd.
   Turn left onto access rd.

PLAN

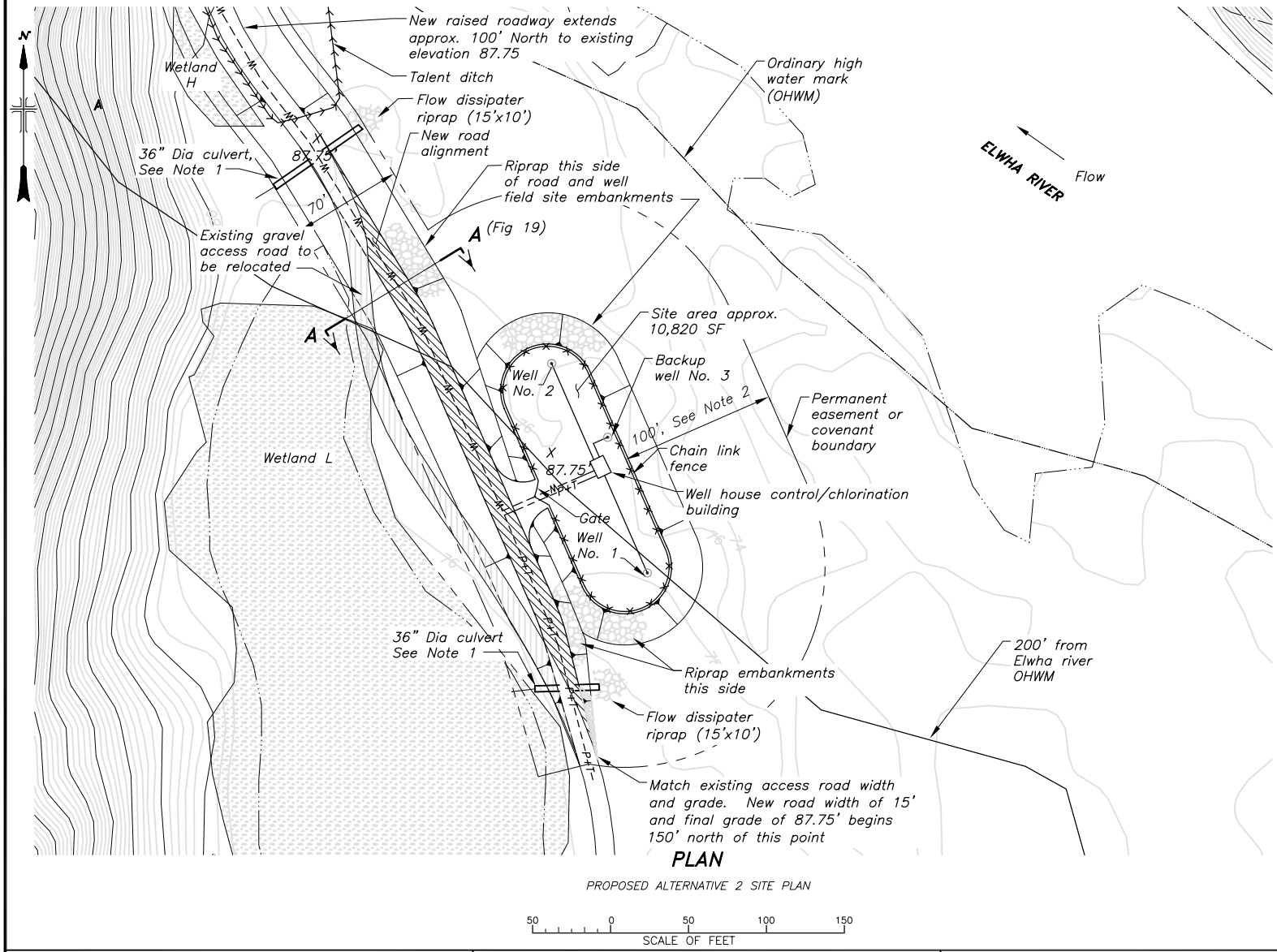
OVERALL SITE PLAN

300 0 300 600 900
SCALE OF FEET

NOTES (cont):

2. *Alternative 2 Site Location 48°6'34"N , 123°32'58"W*
   Start Alternative 2 road fill and embankment at existing elevation 87.75
   Directions to Alternative 2 Site: From U.S. 101W
   Turn right onto Laird Rd.
   Turn Left onto Elwha River Rd.
   Turn Left onto Sampson Rd. after crossing one lane bridge.

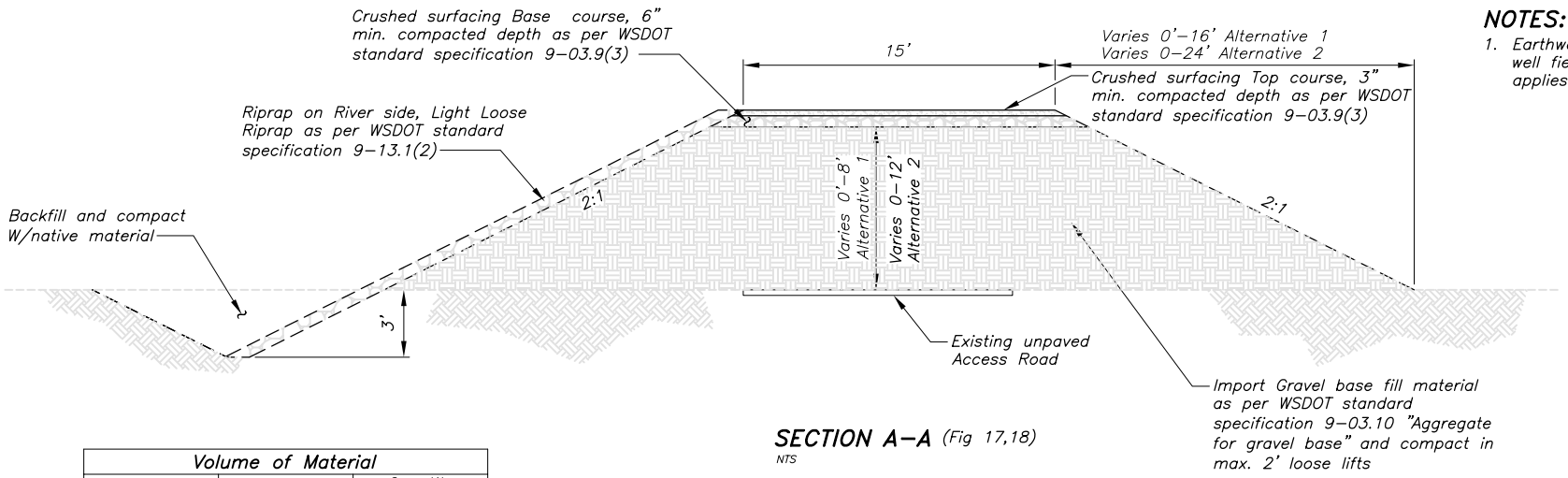
Purpose:	*ELWHA RIVER RESTORATION PROJECT*	*Proposed: Wellfield Protection*
Wellfield Protection	*Dry Creek Water Association (DCWA)*	*Reference: 200600334*
Adjoining Property Owners:	*Overall Site Plan*	*Near: Port Angeles, WA*
See JARPA Application		*Application by: National Park Service*
		Figure XXXXXXXXX 1 *Date: 03/31/06*



NOTES:

1. 2 culverts were assumed. Exact quantity and location of culverts to be determined during design.
2. As per Clallam County and Washington State Department of Health, a 100–foot radius easement or covenant shall be established for a public potable water well. Land use restrictions are placed on the area within this 100–foot radius, referred to as the sanitary control area.

Purpose: Wellfield Protection Adjoining Property Owners: See JARPA Application	ELWHA RIVER RESTORATION PROJECT Dry Creek Water Association (DCWA) Proposed Alternative 2 Site Plan	Proposed: Wellfield Protection Reference: 200600334 Near: Port Angeles, WA Application by: National Park Service Figure XXXXXXXXXX 2 Date: 03/31/06



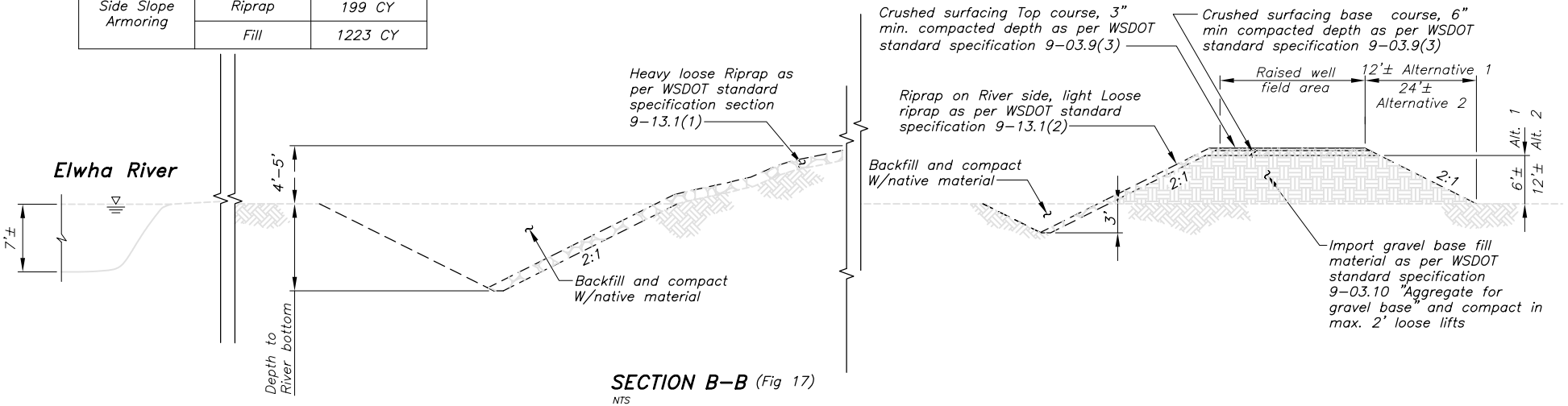
NOTES:

1. Earthwork shown for Alternative 1 well field area (Section B–B) also applies to Alternative 2.

SECTION A–A (Fig 17,18)
NTS

TYPICAL ACCESS ROAD

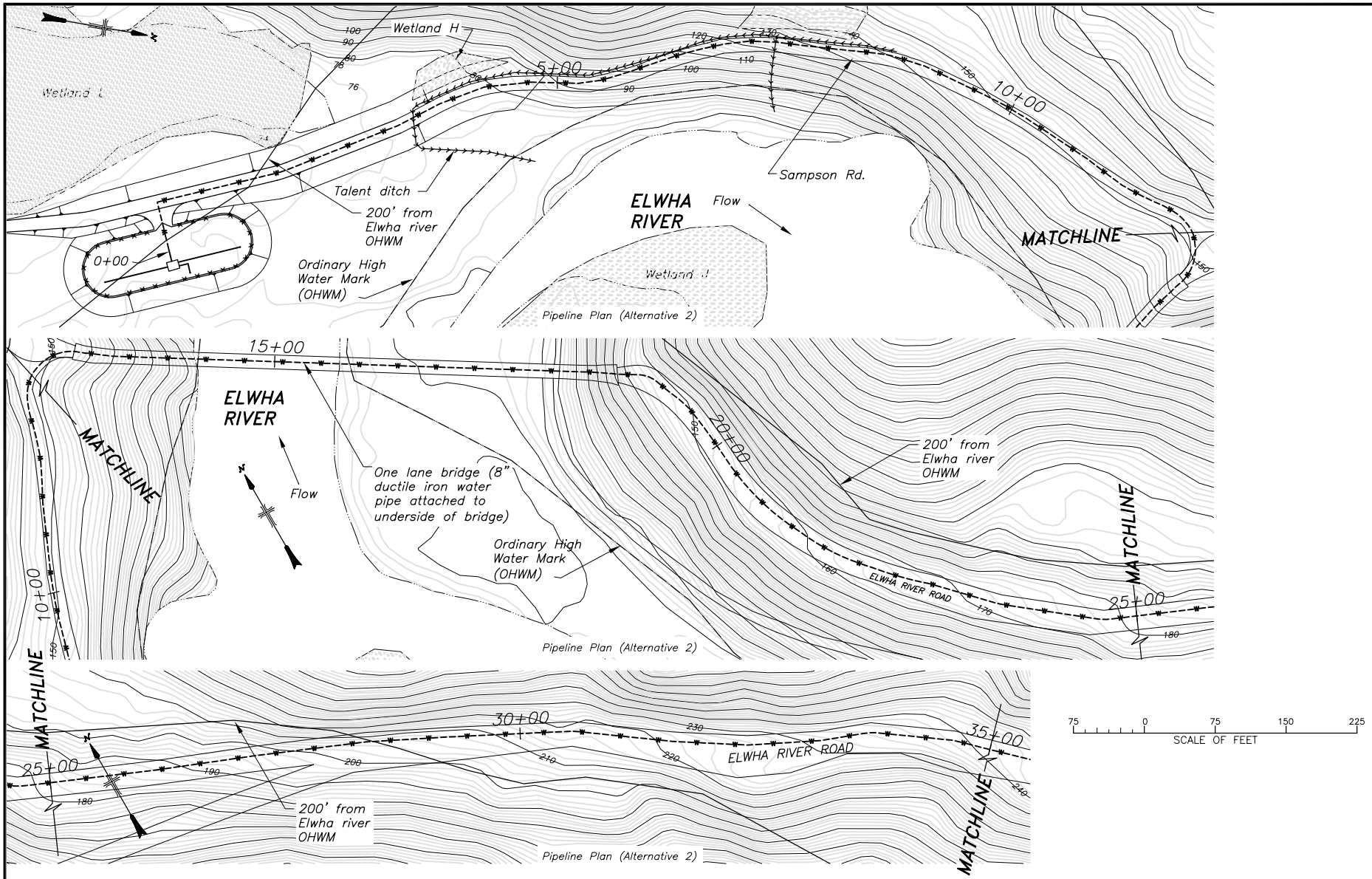
Volume of Material		
Structure	Material	Quantity
Terrace Side Slope Armoring	Excavation	1422 CY
	Riprap	199 CY
	Fill	1223 CY



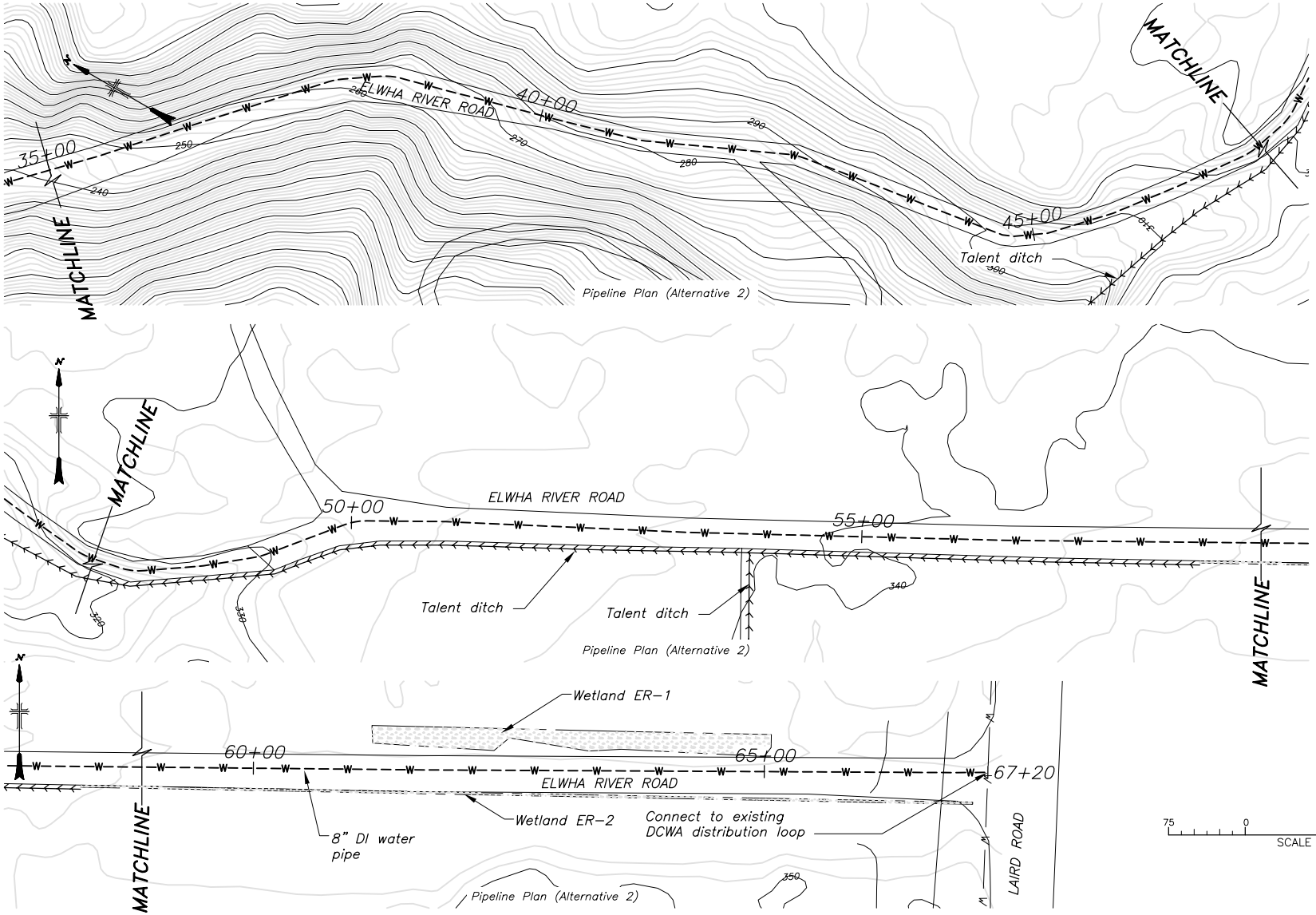
SECTION B–B (Fig 17)
NTS

TERRACE AND WELL FIELD ARMORING AND EARTHWORK

Purpose: Wellfield Protection Adjoining Property Owners: See JARPA Application	ELWHA RIVER RESTORATION PROJECT Dry Creek Water Association (DCWA) Section A–A, B–B	Proposed: Wellfield Protection Reference: 200600334 Near: Port Angeles, WA Application by: National Park Service Figure XXXXXXXXXX 3 Date: 03/31/06



Purpose: Wellfield Protection Adjoining Property Owners: See JARPA Application	ELWHA RIVER RESTORATION PROJECT Dry Creek Water Association (DCWA) Pipeline Plan Alternative 2	Proposed: Wellfield Protection Reference: 200600334 Near: Port Angeles, WA Application by: National Park Service Figure XXXXXXXXXX 4 Date: 03/31/06



Purpose: Wellfield Protection Adjoining Property Owners: See JARPA Application	ELWHA RIVER RESTORATION PROJECT Dry Creek Water Association (DCWA) Pipeline Plan Alternative 2	Proposed: Wellfield Protection Reference: 200600334 Near: Port Angeles, WA Application by: National Park Service Figure XXXXXXXXXX 5 Date: 03/31/06